



Putative type specimens of *Satyrichthys* (Scorpaeniformes: Peristediidae) in the Bleeker collection of the Naturalis Biodiversity Center, Leiden, The Netherlands

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Abstract

The presumed type status of the two remaining specimens of *Peristedion moluccense* Bleeker 1850 in the collection the Naturalis Biodiversity Center was examined by comparing them to descriptions in two Bleeker papers and an unpublished manuscript by Bleeker written for the Atlas Ichthyologique. Latin, French and Dutch parts of these papers were translated into English. The Dutch description of *P. laticeps* Schlegel 1852 was also translated. In the course of this study it became clear why Bleeker considered *P. laticeps*, a as a synonym of *P. moluccense*.

Key words: *Peristedion moluccense*, *P. laticeps*, *P. orientale*, *Trigla brandesii*, Atlas Ichthyologique, RMNH collection

Introduction

A request for photographs of the syntypes of *Peristedion moluccense* Bleeker 1850 (not 1851, see Kottelat 2011), was the start of a search for all Bleeker material of this species in the collection of the Naturalis Biodiversity Center (formerly Rijksmuseum van Natuurlijke Historie, RMNH). Data on the specimens were taken from Bleeker's publications. As recent papers have shown Bleeker often reveals important information on his type specimens in the Dutch remarks preceding or following his descriptions (van Oijen *et al.* 2009; van Oijen & Loots 2012), these remarks were also translated for this study.

The description of *P. moluccense* Bleeker (1850) was based on four badly preserved specimens (see below). Presumably because of the condition of the specimens the description was not illustrated. When Bleeker (1856a) published a re-description of the species mainly based on an additional well preserved specimen; again no figure was included. The absence of an image of the species both in the original description and the re-description is very unfortunate as the species was not included in the published volumes of Bleeker's *Atlas Ichthyologique des Indes Orientales Néerlandaises* (Bleeker 1862-1877). Bleeker had prepared the largest part of the manuscript including figures for Vol. XI of the *Atlas* that included the Trigoidei. In 1927 the manuscript for this volume was completed and prepared for printing by the then RMNH Curator of Fishes, Dr Canna M. L. Popta. Unfortunately it was never printed. The manuscript was, however, preserved in the RMNH archive.

Like the other parts of the *Atlas*, Bleeker's unpublished manuscript is written in Latin and French. An English translation of the relevant part with the description and Bleeker's synonymy of *P. moluccense* is given below. In the translation no corrections were made with regard to Bleeker's rather haphazard use of italics in Latin species names.

Bleeker's re-descriptions of *P. moluccense* (1856a; unpublished) were based on five specimens; the four syntypes from the Banda Islands and one specimen from Ambon Island. However, at the auction of the Bleeker collection (1879) there were only two specimens in the jar of *P. moluccense* (Hubrecht 1879: 10). The jar was in the "A" collection, a selection of the Bleeker collection supposed to contain all types (Hubrecht 1879: iii). The "A" collection was bought by the Rijks Museum van Natuurlijke Historie.

Unaware of Bleeker's description of *P. moluccense*, Schlegel (1852) published (in Dutch) the illustrated description of *P. laticeps*, based on a single specimen and a drawing. The original drawing is missing. An English translation of this description is presented below.

Material and methods

We examined and compared the following specimens with the literature: all extant Bleeker material originally labelled as *Peristedion*; *P. moluccense* Bleeker 1850, 2 specimens (both formerly contained in RMNH 5937, now RMNH.PISC.5937 and RMNH.PISC.35955) and *P. orientale* Temminck & Schlegel 1843, 1 specimen (RMNH 5963); as well as the holotype of *P. laticeps* Schlegel, 1852 (RMNH 523). Taxonomic measurements of these specimens can be found in Kawai 2013.

Peristedion moluccense is mentioned by Bleeker in five publications: 1. the original description (Bleeker 1850); 2. a list of fishes of the Banda Islands (Bleeker 1851); 3. a paper on the fishes of the Malaku Islands (Bleeker 1852); 4. a re-description of the species (Bleeker 1856a); 5. a list of fish species known in 1856 from the Maluku Archipelago (Bleeker 1856b). Moreover, the species is mentioned in an unpublished manuscript by Bleeker, which was intended for the *Atlas Ichthyologique*.

Bleeker does not mention having received specimens of *P. orientale* in any of his papers, not even in his unpublished manuscript for the *Atlas Ichthyologique*. However, the auction catalogue of the Bleeker collection lists one specimen (Hubrecht 1879: 10). This specimen, in an original Bleeker jar, was registered as RMNH 5963. The aberrant label on this jar might be an indication of a very late inclusion of the specimen in the Bleeker collection. Bleeker must have obtained the specimen after he completed his *Atlas* manuscript (after 1873, see below). The specimen is badly preserved; parts of the head shield are found loose in the bottle and the caudal fin is missing entirely. The fact that there are specimens in Bleeker's collection that are not mentioned in his publications was noted before (van Oijen *et al.* 2007).

In the course of our investigation the acronym of the Naturalis register numbers changed from RMNH to RMNH.PISC.

Results

Bleeker's description of *Peristedion moluccense*

In a paper on new species of Scleroparei of the Indian archipelago, Bleeker described a new species of *Peristedion* from Banda Neira, the main island of the Banda Islands, on the basis of 4 specimens, 450–470 mm TL (Bleeker 1850). In the introduction of the paper Bleeker gave important information in Dutch, which is translated as follows:

“Still two other species collected at the Banda Islands I owe to my colleague Mr H.M. Brandes. I received the specimens of these species in a dry and very much damaged state, however their characters have been preserved in a state that is sufficient to distinguish them as new species of *Peristedion* and *Trigla*.

The *Peristedion* is a species, not yet described in recent ichthyological publications, which clearly differs from *Peristedion cataphractum* CV. and *Peristedion orientale* T. Schl. by its broad, flat, strongly converging and in front of the mouth protruding elongations of the anterior suborbital bones, its spineless orbit and suborbital bones, its long preopercular spine, long external barbels, etc. Apparently it is this species, named by me *Peristedion moluccense*, that was already known to De Vlaming, and that later has been depicted in the great work of Valentijn, and in Renard's *Histoire des Poissons etc. du Molucques*. The illustrations of Valentijn and Renard, although deficient, clearly indicate the converging position of the anterior suborbital bones.”

The Latin species description based on the four damaged specimens can be translated as follows:

“*Peristedion moluccense* Blkr.

A *Peristedion* with an octagonal body, tetragonal at the tail. Depth of the body contained about 7 times in its length. Head pyramid-shaped, forked, contained about $2\frac{2}{3}$ times in the length of the body, width of head contained $1\frac{1}{2}$ times

in its length, depth of head about $2\frac{1}{2}$ times in its length. Eye diameter contained about 6 times in the length of the head. Anterior suborbital bones protruding in front of the snout for the length of the eye diameter, converging, blunt, the protruding part nearly twice as long as wide. Nasal spines 3, no orbital and suborbital spines, 2 occipital spines. Mouth toothless. Jaw barbels 3 on each side, the thread-bearing external barbels twice as long as the eye, much longer than internal barbels. Preoperculum with a long spine at the angle surpassing the base of the pectoral fin. Gill cover strongly indented at the top, with two spines. 30 scales on the flanks in a longitudinal row, each scale keeled and armed with a spine. Breast naked under and behind the pectoral fins. Three large keeled scales on each side of the abdomen. First dorsal fin lower than body and barely higher than the second dorsal fin. Other fins (partly broken). Colour of body red? Fins...?

B. 7. D. 7–17. P. 2 free ones + 14. V. 1/5. A. 17. C. 15.”

Schlegel's description of *Peristedion laticeps*

Schlegel (1852) described *Peristedion laticeps* on the basis of one specimen collected by E. A. Forsten at Ambon (RMNH.PISC.523) and a sketch of this fish with live colours made by H. von Gaffron. Dr Med. E. A. Forsten, as a member of the Natural History Commission stayed in the Indonesian archipelago from 14 December 1838. He collected at Ambon Island from 14/4/1842 and died on the island on 3 /1/1843 (Fransen *et al.* 1997). The gunner Heinrich von Gaffron was assigned to him as an artist. Gaffron's figure of *Peristhedion* served as the basis for the live colours of the drawing in Schlegel 1852.

In the introduction of his paper, Schlegel states that his new species *P. laticeps* is the third one of the genus [with *P. cataphractum* and *P. orientale*]. He mentions figures in Vlaming (p. 165, 166), Valentijn (III: 363, n° 55) and Renard (II: pl. 14, fig. 67) probably belonging to the same species and the reference to these figures in Cuvier & Valenciennes (III: 110,111). As he does not give any details, it is not clear if he actually saw these figures. As the description of Schlegel was published in Dutch it is useful to give a translation here:

“Description of a new species of Fishes, *Peristedion laticeps*

For a long time there was only one species of this genus that was erected by Lacepède. This was *Trigla cataphracta*, Linné, that occurs in the Mediterranean.

A second species, *Peristedion orientale*, from the Japanese sea, was described and depicted by us [=Temminck & Schlegel] in 1844. See *Fauna Japonica, Pisces*, p. 37, tab. 14, figs 5 and 6.

At present, we add to this is a third species, *Peristedion laticeps*. It was observed by the late Dr Forsten at the coast of Ambon, and a specimen thereof, accompanied by a sketch, coloured from life, was sent to the Rijks Museum. As already noted by Cuvier and Valenciennes, Poissons III [IV], p. 110 and 111, one might have anticipated the existence of this species from some figures, included in Vlaming n° 165 and 166, in Valentijn, III p. 363, n° 55 and in Renard, II, pl. 14, fig. 67; till now however, it had escaped the attention of naturalists and therefore all means were lacking to represent it as a proper species. We are glad to be able to do this by means of the following description.

Our specimen exhibits, the following peculiarities: Its shape and organization in general agree with that of the common species [= *cataphractum*]. Its total length is about 11 Parisian inches. The length of the head goes two and two thirds times in the total length. The height of the body near the pectoral fins makes up for one eighth of the total length. The body is about as thick as it is high, as usual it is octangular, and becomes very thin caudally. The head width is almost two thirds of its length. Its lateral edges form a weak arch, and rostrally it is extended in the two rather broad and flat, but somewhat inwards curved, bony points of the snout, the length of which fits four and a half times in the head length. The large horizontal edge that determines the lateral margins of the head, ends caudally on each side in a spine-like tip, equal to that of de gill cover. Both large barbels on the lower jaw are provided rostrally with seven smaller barbels, and one perceives apart from that, at the end of the lower jaw, four larger barbels, and below these four smaller barbels. The scutes from which the body covering armour is composed, number thirty-two in each row. Each of these scutes in the centre, as usual, is provided with a curved, hook-like tip. The fins do not offer noteworthy peculiarities. The dorsal fin however, is, just like in the species from Japan, almost everywhere of an equal height, and not separated into parts, like in the common species. Meanwhile, the anterior part is a little higher than the following part, and the four rays, of which it is formed, stand much closer together, indicating, so to speak, the first dorsal fin of the common species. The number of fin rays is as follows: Dorsal fin 24. Anal fin 17. Pelvic fin 6. Pectoral fins 12 + 2. Caudal fin 12.

This fish, when alive, is unicolored pale stone red. On the body this colour is even paler, than on the remaining parts, and it is very faint on the dorsal and anal fin. The iris of the eye is silvery-white, but the broad membrane that surrounds it, has a brown color, whereas the pupil appears bluish black.

We conclude this description, with the distinguishing characters of the three referred species of the genus

Peristedion.

1. *Peristedion cataphractum*. Two dorsal fins, the first with much elongated rays. Lateral edges of the head forming a straight line. Both tips of the snout, forming one third of the snout, medium broad, protruding almost straight ahead, and only very little turned inwards. Upper part of the snout provided with three spines. The edge on the sides of the head, very strong, extended to the cheek, and there just like that above the eye, provided with teeth like spines. Lower jaw, rostrally and on both its barbels provided with a multitude of small and forked threads. D. 7 + 18 or 19. A. 18. Red dorsally whitish ventrally. Pectoral fins, purplish brown. Becomes more than a foot long; inhabits the Mediterranean.

2. *Peristedion orientale*. Both tips of the snout, making up for half of the total snout, turned inwards and small. Upper part of snout, without spines. Lower jaw barbels short. The edges on the sides of the head caudally blunt, reaching only the base of the gill cover. Only one dorsal fin. D. 28. A. 20. Length 8 inches. Red dorsally, whitish ventrally. Pectoral fins, brownish. Inhabits the Japanese sea.

3. *Peristedion laticeps*. Head broad. Lateral edges curved. Tips of the snout broad, turned inwards, making up for a little more than a third of the length of the snout. Upper part of snout provided with three spines. The large barbels of the lower jaw, each provided with seven, the lower jaw rostrally provided with four pairs of smaller barbels. The four rostral most rays of the dorsal fin, a little longer than the following ones. D. 24. A. 17. Colour pale stone red. Almost one foot long. Observed on the coast of Ambon.”

The glass cylinder containing the holotype of *Peristedion laticeps*, RMNH 523, only had a thin external label with the following data:

Peristedion moluccense Bl.

„ *laticeps* n. sp.

Forsten, 18?? Moluques.

Unfortunately the date is rather faded (1851?).

The label text is curious for more than one reason. 1. Bleeker's name is abbreviated to Bl. instead of Blkr. (Bl. usually means Bloch.). 2. The label bears two names: If the label was made after *P. laticeps* was described the name *moluccense* would be superfluous, but if the label was present before 1852, Schlegel must have known the name *moluccense*.

Bleeker's re-description of *P. moluccense*

After having received “an excellent, in spirit preserved specimen from Ambon with a length of 270” [mm TL], presented to Bleeker “by Mr D.S. Hoedt, secretary of the government of the Moluccas”, Bleeker (1956a) was able to improve the original description of *P. moluccense*.

In this re-description the following data were added to and/or changed in the original description: proportions of the head and the rostral extensions; number and length of the barbels; length of the opercular spines; number of scales on the lateral line and transverse rows; squamation; shape and length of all fins, and colouration.

Five specimens of 270-470 mm, were listed as material. Bleeker did not state whether or not he still possessed the four “dry and very damaged specimens” on which he had based the original description.

The ranges in measurements and counts given in the re-description suggests that Bleeker examined more than one specimen. However, as one end of the range always is the same as the figure in the original description, Bleeker probably just copied them from that description. The description of the fins and the barbels, were based only on the 270 mm specimen. Bleeker did not refer to the number of barbels (3) given in his original description.

In the synonymy, Bleeker did not mention *Peristedion laticeps* Schlegel. This means that, four years after its publication, the *Bijdragen tot de Dierkunde Vol. I* still had not reached Batavia.

***P. moluccense* in an unpublished manuscript by Bleeker**

When Bleeker died in 1878, only nine volumes of his *Atlas* had been printed. However, Bleeker by then had manuscripts for the unpublished parts in various states of completeness. Among the Bleeker material in the

archives of Naturalis Biodiversity Center, an almost complete Latin and French manuscript on the Triglidae was found. As the manuscript is essential to understand Bleeker's concept of *P. moluccense* and *P. laticeps* and thus for the present study, we here give a translation of the part on Bleeker's subfamily Peristethiiformes [now Peristethiinae]:

“Subfamily Peristethiiformes

Triglidae with an octagonal body, covered with armed scales. Head strongly depressed, scaleless. Jaws toothless, gill opening continuing under the throat. A single undivided dorsal fin, anterior part, with flexible spines, shorter than posterior part. Pectoral fins with 4 branched rays, the lower part with 2 free, double rays, ventral fin with 5 branched rays, caudal fin with 10 branched rays.

Peristedion Lac. = Octonus Raf. = Peristethus, Polycanthichthys, Satyrichthys Kp = Peristethidion A. Dum.

Jaws toothless, lower jaw shorter. Snout strongly depressed, forked. Scales on the trunk in 4 longitudinal rows, scales on the back, flanks and tail armed with a spine-bearing ridge, scales on the belly not keeled or armed. Dorsal fins with 5 to 8 spines and 13 to 20 undivided rays, posterior rays of ventral fins much longer than other rays, anal fin with 13 to 21 undivided rays.

Remark. There are only eight proper species known of this genus. *Peristedion catafractum* and *brevirostre* inhabit the Atlantic basin, *Peristedion orientale* and *Rieffeli* the sea of China and Japan, *Peristedion engyceros* lives on the coasts of the Sandwich islands, and the three other species occur in the sea of the Moluccas and Célèbes. Of these species I only possess *Peristedion moluccense*. They can be distinguished as indicated below.

I. Upper side of head armed with spines. Preopercular spine strong.
Preorbital-preopercular crest divided in rounded lobes. D. 5/13. P. 7. A. 13.

1. *Peristedion prionocephalus* Blkr. = *Peristethidion prionocephalum* A. Dum.

Preorbital-preopercular crest without lobes or indentations. Elongations of the snout converging. D. 8/16. P. 13. A. 17.

2. *Peristedion moluccense* Blkr

II. Forehead and snout spineless. No preopercular spine. D. 8/18. A. 21.

3. *Peristedion liorhynchus* Blkr. = *Peristethus liorhynchus* Günther”

In this manuscript Bleeker copied the original descriptions of *P. prionocephalus* Dumeril and *P. liorhynchus* Günther. For the description of *P. moluccense* he adapted and extended his re-description (Bleeker 1856a). For a large part this description is an exact copy of Bleeker 1856a. However, Bleeker left out the relative lengths of the pectoral, pelvic and caudal fins, but added, among others, more details on the scales. Furthermore the synonymy is extended. On the basis of the literature quoted in this list we can conclude that Bleeker made this description *after* 1873.

The unpublished description is translated as follows [changes with respect to Bleeker 1856a in bold]:

“*Peristedion moluccense* Blkr, N. soort Sclerop. Nat. T. Ned. Ind. I p. 24; Act. Soc. Scient. Ind. Neerl. I Besch. visch. Amb. p. 30. Atl. Tab. 422 Trigl. Tab 2 fig. 1.

A *Peristedion* with a body that is octagonal **anteriorly** and tetragonal at the tail, depth of the body contained **6 to 7** times in its length. Head **strongly** depressed and strongly acute, width of head contained $1\frac{1}{2}$ to 1 in its length, depth of head contained $2\frac{1}{2}$ to $2\frac{1}{3}$ times in its length. Eye diameter contained **$5\frac{1}{2}$ to 6** times in the length of the head. Preorbital bones protruding in front of the snout for a length **slightly less to slightly more** than the longitudinal eye diameter, converging **in front**, the protruding part flat, blunt, less than twice as long as basal width, contained nearly 3 times **to more than 3 times in the distance between its tip and the eye**. **Preorbital-preopercular ridge undivided, not lobed in any cisure** [This word has no meaning. Maybe Bleeker intended to write scissure the Latin word for cleft.], 3 short rostral spines, no orbital and suborbital spines, on each side one spine on the frontal, 2 occipital spines on each side. Six mandibular barbels on each side, **arranged in two rows**, those in the inner row simple, shorter than the pupil, anterior barbels in outer row simple, not much shorter than the eye, the posterior barbel

more than twice as long as the eye, strongly branched. Preoperculum angle spine surpassing the base of the pectoral fin, gill cover with a large excision at the top, and two spines, the upper spine longer than the lower one. **About 25 scales in a longitudinal row between the back of the head and the base of the caudal fin**, 30 or 31 scales **between the upper angle of the gill opening and the base of the caudal fin**, about 20 on the lower part of the trunk, **between the anus and the base of the caudal fin**; 4 transverse scale rows; each of the scales on the back, flanks and tail with a spine-bearing ridge in the center, the 8 or 9 posterior scales in the lateral line with a serrated ridge rostrally and armed with a spine caudally; ventral scales wide, flat, slightly square, not armed: throat and postaxillar chest region naked. Dorsal fin rather deeply emarginate between the spinous and rayed part, spinous part higher than rayed part, but lower than the body, pectoral fins **obtusely rounded, slightly longer than head without rostrum**, free rays at the tip **slightly swollen**, the posterior [free] ray longer than the anterior one, anal fin convex, barely lower than rayed part of dorsal fin, caudal fin extended, **slightly** emarginate, with acute angles, **shorter than head without rostrum**. Body and fins pale pink, **iris silver or pink, margin of pupil golden**. Upper part of dorsal fin and lower part of anal fin yellowish

B. 7. D. 8/16 all simple P. 3 /9/1 + 2 free V. 1/5. A. 17 all simple C. 1/10/1 plus the short adjacent ones.

Syn. *Ikan Paring* Ruysch, Coll nov. pisc. Amb. p. 32. tab 17 fig 2; Ren. Poiss. Mol. II tab. 14 fig 67.

Ikan Seijthan merah Valent. Amb. Fig 55

Peristedion laticeps Schl. Besch. N. soort Vissch. Bijdr. Dierk. P. 43 tab.

Peristethus gigas et brevifurcatus Kp, Descr n. spec. Fish, Proc. Zool. Soc. 1859 p. 106.

Peristethus moluccensis et laticeps Günth, Cat Fish II p. 219

Peristethidion moluccense, laticeps et gigas. A. Dum. Not. Trios Poiss Mus. N. Archiv. Mus. hist. nat. IV p. 112, 113.

Satyrichthys moluccensis, laticeps Kp., Triglid., Arch. Naturg. XXXIX. I. p. 83

Ananas Ambon.

Hab. Amboina: Banda (Neira): in the sea.

Length of 5 specimens 270''' to 470'''.

Remark. The *Peristethus moluccense*, *brevifurcatus*, *laticeps* and *gigas* of other authors are only a single species of which the main characters are the convergence of the prolonged preorbitals, the spines on top of the head, the strong preopercular spine, the numbers of armed body scales and the fin ray counts."

Unfortunately the figure of one of the syntypes (or more likely of the fifth specimen from Ambon) referred to by Bleeker (*op. cit.*) is missing (Boeseman 1983).

Synonymy of *Peristedion* species by other authors

Günther (1860: 219), who followed Kaup (1859) in placing *Peristedion* in the synonymy of *Peristethus*, regarded *P. laticeps* as a proper species, and placed *P. gigas* Kaup 1859 in the synonymy of *P. moluccense*. Günther's short descriptions of *Peristethus lasticeps* and *P. moluccense* do not contain characters that can be used to separate these species.

De Beaufort (in De Beaufort & Briggs 1962: 121) who followed Bleeker in considering *Peristedion laticeps* as a junior synonym of *P. moluccense*, wrote that he examined the types of *P. moluccense* and *P. laticeps* in the Leiden Museum. De Beaufort gives a length of 436 mm for *P. moluccense*. Apparently this is his measurement of the largest specimen then contained in RMNH 5793.

The Bleeker specimens of *P. moluccense* in the Naturalis Bleeker collection

Although Bleeker (1856a; unpublished) mentions four dry and one alcohol preserved specimens of *P. moluccense*, there are only two specimens of this species listed in the auction catalogue of the Bleeker collection, both preserved in alcohol (Hubrecht 1879: 10).

At the auction, the 2 specimens of *P. moluccense*, contained in the original Bleeker jar, with all other specimens from the A collection, were bought by the Rijks Museum van Natuurlijke Historie. The specimens in the *P. moluccense* jar were registered as RMNH 5937.

From the tip of the snout (not the tip of the extended preorbital) the specimens measure 251 (265) and 390 (438) mm SL (TL). The larger specimen has been in a coiled position in an essentially too small jar for a long time,

but was stretched to the limit. As Bleeker never attached individual labels to specimens in his collection and put conspecific specimens from different localities in one jar, we can almost never be sure of the origin of his specimens.

However, the total length, meristics, barbel and fin characters, and the good state of preservation of the smaller specimen make it very probable that this is the specimen from Ambon collected by Hoedt and described by Bleeker in 1856 (Bleeker 1856a). At present the caudal fin outline of this specimen is convex rather than emarginate as the tips of all rays are broken off. The size of the larger specimen is very close to that of the smallest syntype of *Peristedion moluccense* (450 mm TL). However, the present condition of the specimen is much too good for a specimen described by Bleeker (1850) as “dry and very badly preserved”.

Note on the discarded holotype of *Trigla brandesii* Bleeker 1850

The unpublished manuscript of the Trigloidei for the Atlas also contains a description of *Trigla brandesii* Bleeker, 1850, the original description of which was based on a single, badly preserved dry specimen that Bleeker received simultaneously with the four specimens of *Peristedion moluccense*. Bleeker makes the following remark in the manuscript: “Of this species I have only seen one badly preserved specimen that since a long time is no longer part of my collections.” Bleeker does not state the reason why the specimen was not preserved, but we may assume that its bad condition may have necessitated him to dispose of it. Similarly, the bad state of preservation of the four types of *P. moluccense*, which were part of the same collection of Dr Brandes, might have been reason why they were not kept in Bleeker’s collection.

Recent identifications of Bleeker’s specimens

Kawai (2013), in a revision of the genus *Satyrichtys*, concluded that *P. moluccense* Bleeker, 1850 and *P. laticeps* Schlegel, 1852 are distinct species belonging to the genus *Satyrichthys* Kaup, 1873. Examination of the Naturalis Bleeker material of *P. moluccense* by Kawai showed that the two specimens of RMNH. 5937 belong to two species: only the larger specimen (438 mm TL) can be assigned to *S. moluccense* (Bleeker 1850). This specimen is now catalogued as RMNH.PISC.5937. The smaller, 265 mm TL, specimen was identified as *S. laticeps* (Schlegel, 1852). This specimen is now catalogued as RMNH.PISC.35955.

In Bleeker’s time the Rijksmuseum van Natuurlijk Historie also possessed one stuffed specimen identified as *P. moluccense*, ca. 550 mm SL collected by Hoedt from Ambon, Indonesia, in 1866. This specimen that Bleeker actually may have identified, was also re-identified by Kawai (2013) as *S. laticeps* and is now registered as RMNH.PISC.662.

Conclusion

A detailed study of all published and unpublished Bleeker papers on *Peristedion*, and examination of the specimens of *P. moluccense* from Bleeker’s collection in Leiden (RMNH 5937) made clear that neither of the two preserved specimens can be one of the four original specimens (syntypes). As there are no specimens of *P. moluccense* from the Bleeker collection in other museums, we conclude that all four syntypes of *P. moluccense* are missing. Most probably Bleeker himself, because of their bad state of preservation disposed of them. In 1855, Bleeker received a well preserved specimen that, except for the number of barbels, agreed with his (not very detailed) description of *P. moluccense*. On this specimen, (the smaller specimen from RMNH 5937) (actually *S. laticeps*) he based his re-description of *P. moluccense*.

The origin of the larger specimen is not documented. If Bleeker had this specimens in his possession in 1856, or when he extended his re-description after 1873 (Bleeker, unpublished), he surely would have noticed the differences in barbels and other characters with the smaller specimen. Even though he probably would have considered the barbel characters subordinate to the converging preorbitals, his description would have been different. However, the larger specimen certainly was not used for either description. Therefore we conclude that the larger specimen must have been obtained by Bleeker after he completed the last, unpublished, description.

Bleeker’s (1856a) re-description of *P. moluccense* was based on specimens of two species. After Bleeker

returned to the Netherlands he must have seen the type of *P. laticeps* in Leiden, but, as it was similar to the specimen on which he had based his re-description of *P. moluccense*, Bleeker must have concluded that Schlegel's *P. laticeps* was a synonym of *P. moluccense*. On the basis of this material Schlegel must have supported this conclusion. The two names on the jar (RMNH 523) are interpreted as supporting this view.

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